

The effect of water management on in-crop methane emissions in Australian high-yielding temperate rice crops

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Evidence is accumulating that alternative wetting and drying water management strategies can reduce in-crop methane emissions in rice systems compared to continuous flooding, but may increase nitrous oxide emissions. However, little is known about how water management affects methane and nitrous oxide emissions in Australian temperate rice crops. We investigated the impact of water management on in-crop methane and nitrous oxide fluxes over two seasons in rice-on-rice rotations using static and automated chamber techniques. Crops were either aerial sown with continuous flooding (CF), drill sown with continuous flooding beyond 7-8 weeks after sowing (DS-CF), or drill sown with continuous flooding beyond 10-12 weeks after sowing (delayed permanent water; DPW). Methane and nitrous oxide fluxes and cumulative emissions across the season for all treatments are discussed in relation to the crop rotations, stubble management and nitrogen fertiliser regimes used in Australian rice cropping systems.